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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/914,699 | 08/14/2002 | Martyn Poliakoff | 2577/104 | 1008 |

2101 7590 03/06/2007
BROMBERG & SUNSTEIN LLP
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BOSTON, MA 02110-1618

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| EXAMINER |
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KEYS, ROSALYND ANN

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

1621

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 03/06/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/914,699

Applicant(s)

POLIAKOFF ET AL.

Examiner

Rosalynd Keys

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11 and 31-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11 and 31-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Status of Claims

1. Claims 11 and 31-48 are pending.
Claims 11 and 31-48 are rejected.
Claims 1-10 and 12-30 are cancelled.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 11 and 31-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun (US 6,046,373) alone or in view of Sun et al. (US 5,962,800) and further in view of Mao (US 5,780,689), for the reasons given in the previous office action, mailed July 12, 2006.

Response to Arguments

5. Applicant's arguments filed December 13, 2006 have been fully considered but they are not persuasive.

The Applicants argue that Sun 1 is directed almost entirely to the preparation, of a modified catalyst but does disclose the use of the catalyst for production of olefins from oxygenates. The Examiner disagrees. Sun teaches a process to convert oxygenates to olefins (see for example column 7, lines 3-40).

The Applicants argue that Sun 1 does not disclose carrying out this reaction, under supercritical conditions. The Examiner disagrees. Sun teaches that the process may be carried out in a liquid,

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supercritical fluid, a mixed vapor/liquid, or a mixed vapor/supercritical fluid phase (see column 7, lines 47-52).

The Applicants argue that there are absolutely no examples in Sun 1 for using supercritical conditions for the disclosed reactions. This argument is not persuasive because a prior art disclosure is not limited to its working examples or to its preferred embodiments, but must be evaluated for what it teaches those of ordinary skill in the art. Merck & Co. Inc. v. Biocraft Labs. Inc., 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989); In re Fracalossi, 681 F.2d 792, 794 n.1, 215 USPQ 569, 570 n.1 (CCPA 1982); In re Lamberti, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976); In re Boe, 355 F. 2d 961, 965, 148 USPQ 507, 510 (CCPA 1966). In the instant case, Sun 1 teaches that supercritical conditions can be utilized in the process.

The Applicants argue that there is nothing in the teaching of Sun 1 that would lead the skilled person to believe that at super critical or near critical conditions selectivity for a desired olefin from a number of possible olefin products can be obtained. The Examiner disagrees. Sun teaches that the process may be carried out in a liquid, supercritical fluid, a mixed vapor/liquid, or a mixed vapor/supercritical fluid phase (see column 7, lines 47-52). Sun teaches that when the process is carried out in such phases, different conversions and selectivities of feedstock-to product may result depending upon the catalyst and reaction conditions.

The Applicants argue that there is no reasonable expectation of success in producing selective products using the process of Sun 1, because nothing in Sun 1 suggests that supercritical fluids are preferable to other reaction conditions, or that selectivity within a product class can be achieved by preferentially using supercritical conditions. This argument is not persuasive because Sun 1 teaches that a change in the phase, which includes a change to a supercritical phase, will result in a change to the product conversion and selectivity (see column 7, line 46 to column 8, line 20). Thus, the Examiner believes that although there may not be a preference to utilize supercritical conditions in the process of Sun 1, there is motivation to utilize supercritical conditions if one wants to obtain a particular product and teaching that if one utilizes supercritical conditions that one can change the selectivity to a desired product.

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The remaining arguments with respect to Sun 1 are mainly directed to preferences of Sun. As stated earlier a prior art disclosure is not limited to its working examples or to its preferred embodiments, but must be evaluated for what it teaches those of ordinary skill in the art. The Examiner believes that though there may not be a preference in Sun 1 to specifically select supercritical conditions, a continuous flow reactor, and a heterogeneous acid catalyst there use if clearly suggested. The Examiner does not believe that the ability to obtain a particular product in high yield or selectivity is unexpected, since Sun 1 teaches that the conversion and selectivity can be modified depending upon the catalyst and reaction conditions (see column 7, lines 46-52).

The Applicants arguments with respect to Sun 2 have been considered but they are not persuasive because Sun 2 teaches that upper extremes of pressures may be utilized (see column 4, lines 18-31). Although it is taught that changing the pressure will effect the selectivity and/or conversion rate it is not taught that a pressure change will effect the ability of the monolithic support to perform in supercritical conditions. Thus, the Examiner believes that there is a reasonable expectation of success for using the monolithic support of Sun 2 as a carrier for the zeolites and molecular sieve catalysts of Sun 1.

The Applicants arguments with respect to Mao have been considered but they are not persuasive because the skilled artisan would reasonably expect to obtain the same results whether the sulfonic acid is ionized or not. Thus, although a change in pressure may result in a change in the catalyst it would not expected to result in a change in the ability of the catalyst to effect conversion of the oxygenates.

The Examiner believes that there is motivation to use supercritical conditions in the process of Sun 1, as this would allow one to obtain different conversions and selectivities of feedstock-to-product as taught by Sun.

For the above reasons, the Examiner believes that a prima facie case of obviousness has been shown. The rejection of claims 11 and 31-48 under 35 U.S.C. 103(a) as being unpatentable over Sun (US 6,046,373) alone or in view of Sun et al. (US 5,962,800) and further in view of Mao (US 5,780,689) is maintained. New claims 47 and 48 are also unpatentable over Sun (US 6,046,373) alone or in view of Sun et al. (US 5,962,800) and further in view of Mao (US 5,780,689).

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Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosalynd Keys whose telephone number is 571-272-0639. The examiner can normally be reached on M, W & F 5:30-7:30 am & 1-5 pm; T & Th 5:30 am-4 pm.

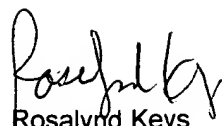
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman Page can be reached on 571-272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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A handwritten signature in black ink, appearing to read 'Rosalyn Keys', is positioned above the printed name.

Rosalyn Keys
Primary Examiner
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March 5, 2007